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Application for U.S. Letters Patent

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For:

**EASY ACCESS AND EGRESS SURFER'S WET SUIT**

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## **EASY ACCESS AND EGRESS SURFER'S WET SUIT**

### **Field of the Invention**

[0001] The present invention relates to improved access and egress wet suits, especially for use by surfers. In particular, the present invention allows a surfer quick and easy access to and egress from a wet suit.

### **Background of the Invention**

[0002] An important feature of wet suits is to provide thermal insulation to the wearer during a variety of aquatic activities, such as surfing. Wet suits permit the entry of some water between the wet suit and a user's body. Wet suits greatly restrict the circulation of the water, however, so that the water inside the suit warms up as a result of contact with the user's body. The combination of the thermal insulation of the wet suit material and the thermal insulation of the warmed water inside the suit thermally protects the wearer of the suit against cold water.

[0003] Wet suits are formed typically from foamed plastic or rubber sheet material, most typically foamed neoprene. This rubber sheet material can have a fabric layer, often a nylon fabric, bonded to one or both sides. The inside of a wet suit, for example, usually has nylon fabric bonded to the foamed neoprene to provide additional strength and to provide a more comfortable surface against the wearer's skin.

[0004] Wet suits can be constructed as full length, single piece suits or two-piece suits with separate tops and bottoms. Wet suits are formed from a plurality of pieces of rubber sheeting that are glued, taped and sewn together to form a garment which closely conforms to the user's body. Wet suits have narrowed legs and arms that help maintain thermal integrity.

[0005] For many aquatic activities, it is desirable for the wet suit to be as

stretchable and flexible as possible, while maintaining the thermal properties. As the need for thermal insulation increases, the thickness of the suit material is correspondingly increased. Thus, wet suits used for cold water aquatic activities are often constructed with a neoprene thickness (for example, up to five millimeters thick) that substantially inhibits the stretching and bending which would normally be required to participate in the activity.

[0006] Getting into and out of a tight fitting wet suit poses a problem for many people. When the user attempts to get in or out of a conventional wet suit, the narrowed leg and arm portions of the wet suit can make it difficult. The user of a conventional wet suit has to force her feet and hands through the narrowed openings. This difficulty increases as the wet suit material becomes thicker, and it is further compounded if the user is wearing a Lycra garment under the wet suit, which often is the case. Since wet suits are usually donned and removed at locations such as beaches, inelastic wet suits can require significant and undesirable struggling and inconvenience to the user as the suit is put on and taken off.

[0007] In addition to a user's typical difficulty getting into or out of the narrowed extremities, *i.e.* arm and leg portions, of the conventional wet suit, many users have reduced flexibility or diminished strength that compound access and egress to the conventional wet suit. The diminished strength or reduced flexibility of the user may be a chronic or temporary condition. For example, people who experience these compounding physical conditions are: older users, users with diseases reducing flexibility, such as arthritis, or even temporarily diminished strength after a particularly strenuous day.

[0008] In light of the above, a need exists for a wet suit that maintains thermal integrity of the wet suit while permitting users having a range of different physical conditions to quickly and easily don the wet suit, take advantage of a wave, and allow easy egress from the wet suit.

**Summary**

[0009] The present invention satisfies that need. The present invention is an improved access and egress surfer's wet suit that comprises a wet suit having an extremity portion with an extremity opening for an extremity, and a gusset at the extremity opening, wherein said gusset increases the elasticity of the extremity portion near the gusset; and a releasable closure for securing the gusset around the extremity opening, and providing a snug thermal seal for the extremity portion. As used herein, "an extremity portion with an extremity opening for an extremity" of the wet suit includes "an arm portion with a hand opening for a hand" and "a leg portion with a foot opening for a foot."

**Brief Description of the Drawings**

[0010] Fig. 1 is a front perspective view of a wet suit having the novel structure of the present invention;

[0011] Fig. 2 is a rear elevation view of a wet suit having the novel structure of the present invention;

[0012] Fig. 3 is an enlarged fragmentary perspective view of a gusset with a releasable closure on an arm portion of the wet suit shown in Fig. 2;

[0013] Fig. 4 is an enlarged fragmentary perspective view of a gusset with a releasable closure on a leg portion of the wet suit shown in Fig. 2;

[0014] Fig. 5 is an enlarged fragmentary perspective view of a releasable closure secured or closed around an arm portion of the wet suit shown in Fig. 1;

[0015] Fig. 6 is an enlarged fragmentary perspective view of a gusset with a releasable closure on an extremity of the wet suit according to the present invention;

[0016] Fig. 7 is an enlarged fragmentary perspective view of a gusset with a releasable closure on an extremity of the wet suit according to the present invention; and

[0017] Fig. 8 is an enlarged fragmentary perspective view of Fig. 7 shown with the releasable closure secured or closed around an extremity portion of the wet suit. .

**Detailed Description of Preferred Embodiments**

[0018] Fig. 1 is a front perspective view of an easy access and egress surfer wet suit **10** of the present invention. In the front view, a wet suit **12** having arm portions **14** with first and second hand openings **16,18** for hands, leg portions **20** with first and second foot openings **22,24** for feet, and a torso portion **26** is shown. The arm and leg portions **14, 20** of the wet suit **12** are shown in a closed or synched tight position. In the closed position means that releasable closures **28** (only the exterior of releasable closures is shown in Fig. 1) secure or fasten the hand and foot openings, **16,18,22,24** to the arms and legs of a user for a snug thermal seal. The gussets, not shown in this view, are closed by the releasable closures **28**.

[0019] Fig. 2 is a rear elevation view of the easy access and egress surfer wet suit **10**, gussets **30** are shown in an open position. In the open position, the increased elasticity of gussets **30** facilitates entry of the hands and feet through the hand and foot openings **16,18,22,24** of the arm portions **14** and leg portions **20**. The arm portions **14** and leg portions **20** are referred to generally as extremity portions. The releasable closures **28** are shown in the open position means not secured to or closed onto the arms or legs of the user. Other features shown in Fig. 2 include a plastic zipper (unzipped) **32** extending from the neck portion **34** to midway in the back of the wet suit **12**.

[0020] Fig. 3 is an enlarged fragmentary perspective view of an "open gusset," previously referred to as a gusset **30** shown in the open position in discussing Fig. 2. The gusset **30** is located at the first hand opening **16** of the arm portion **14**, and the releasable closure is a hook and loop fastener **36** with **36a** (hook) and **36b** (loop). The gusset **30** is substantially in the shape of a triangle. The dimensions of the gusset **30** include a base **d,e** of about 2 inches at the hand opening closest to the hand, and an apex **f,g** of about 2 inches measured at the point of the triangle away from the base **d,e**. The gusset **30** shown in Fig. 3 was made from a web of nylon; whereas, the material on the arm portion—on both sides of the gusset **30** was made from neoprene. The hook and loop fastener **36** with **36a** and **36b** are on the outside of the arm portion **14**.

[0021] Fig. 4 is an enlarged fragmentary perspective view of a gusset **30** with the releasable closure being a hook and loop fastener **36** with **36a** and **36b** at the first foot opening **22** of the leg portion **20**. The gusset **30** is substantially in the shape of a triangle.

The dimensions of the gusset **30** include a base **h,i** of about 2.5 inches at the first foot opening closet to the foot, and an apex **j,k** of about 6 inches measured at the point of the triangle away from the base **h,i**. The gusset **30** shown in Fig. 3 was made from a web of nylon; but, 1 millimeter thick neoprene material is another suitable material for the gusset **30**. The hook and loop fastener **36** with **36a** and **36b** are on the outside of leg portion **20**.

[0022] Fig. 5 is an enlarged fragmentary perspective view of a "closed gusset" secured over the arm portion **14**, previously the "closed gusset" was referred to as a gusset **30** shown in the closed position in discussing Fig. 1. In the closed position, the releasable closure **28** (only the exterior of releasable closure is shown) provides a snug thermal seal for the arm portion **14** as the extremity portion shown in this drawing.

[0023] The closed gussets secured by releasable closures provide thermal seals comparable to prior art wet suits without gussets. Likewise, a closed gusset secured over the leg portion, the other extremity portion, provides a snug thermal seal comparable to a prior art wet suit without gussets

[0024] Fig. 6 is an enlarged fragmentary perspective view of an alternate embodiment of a gusset **30** with the releasable closure being a hook and loop fasteners **36**, on the hand or foot opening of the extremity portion **38** of the wet suit **12** according to the present invention. The gusset **30** shown in this embodiment is a bi-cut shape of two pencil shaped cuts that form the gusset **30**. The releasable closure is a hook and loop fastener **36** on a flap and a D-ring **40** (a metal ring shaped like a D). The hook and loop fastener **36** fits through the D-ring **40**, and folds back upon itself to close. A material that can be used to form the gusset in the bi-cut shapes is 1 millimeter thick neoprene.

[0025] Gussets in a variety of different shapes can work in the invention. In addition to the triangle and the bi-cut shapes of gussets described above, other shapes (not shown) can be used in the present invention. For example, a substantially semi-circular shape made of 1 millimeter thick neoprene can be substituted in place of the above gusset shapes. Other shapes for the gusset include substantially square cut, substantially rectangle cuts, and substantially pencil shaped cut. These cuts of gussets can also be made from 1 millimeter thick neoprene.

[0026] "Gusset" as that term is used herein is intended to include and encompass one cut or more than one cut, as for example the bi-cut shape described in Fig. 6, so long

as the cuts increase the elasticity of the hand or foot opening of the extremity portion of the wet suit.

[0027] Fig. 7 is an enlarged fragmentary perspective view of an alternate embodiment of a gusset 30 with the releasable closure being a belt 42 having a first belt end 44 and a second belt end 46 and a press clamp 48 (not shown in this Figure). In this embodiment, the belt 42 is woven inside a pocket 50. The belt ends 44, 46 emerge on each side of the gusset 30.

[0028] Fig. 8 is an enlarged fragmentary perspective view of the embodiment of Fig. 7 shown with the releasable closure in a closed position. The belt ends 44, 46 are shown using the press clamp 48 to secure the area around the extremity portion. The press clamp 48 can be plastic, and the pocket 50 can be made of a neoprene material. Other suitable materials that are known and apparent to those of ordinary skill in the arts.

[0029] Releasable closures of the invention include loop and hook fasteners, press clamps, cords, belts, and similar attachments that can achieve a snug fit around hand and foot openings of the arm and leg portions of the wet suit to maintain a thermal seal when in the closed position. The releasable closures can be attached to the outside or the inside of the wet suit so long as the snug fit can be maintained when the releasable closure is in the closed position. A releasable closure, such as a hook and loop fastener or a press clamp, that can be secured using one hand is preferable because of the ease of operation, and to free up the other hand for example to holding a surf board.

[0030] An improved access and egress surfer's wet suit comprises a wet suit having an arm portion with a first hand opening for a hand, and a leg portion with a first foot opening for a foot; gussets at the first hand and foot openings that increase the elasticity of the arm and leg portion near the gussets; and releasable closures for securing gussets around the hand and foot openings, and providing a snug thermal seal for the arm and leg portions.

[0031] An improved access and egress surfer's wet suit comprises a wet suit having arm portions with hand openings for each hand, and leg portions with foot openings for each foot; the leg and arm portions of the wet suit having gussets at the hand and foot openings to increase the elasticity of the arm and leg portions near the gussets; and releasable closures for securing gussets around the hands and feet to provide snug



thermal seals around the hand and foot openings of the arm and leg portions.

[0032] Wet suits can be constructed as full length, single piece suits and as two-piece suits with separate tops and bottoms. The present invention is intended to encompass full length, single piece suits and two-piece wet suits with separate tops and bottoms. A top or a bottom piece of a two piece wet suit would benefit from the present invention.

[0033] For example, a top piece according to the invention would comprise an arm portion with a hand opening for a hand, and a gusset at the hand opening, and a releasable closure for securing the gusset around the hand opening to provide a snug thermal seal for the arm portion. A bottom piece according to the invention would comprise a leg portion with a foot opening for a foot, and a gusset at the foot opening, and a releasable closure for securing the gusset around the foot opening to provide a snug thermal seal for the leg portion.

[0034] An improved access and egress surfer's wet suit comprises a wet suit (one piece or two piece suit) having an extremity portion with an extremity opening for an extremity, and a gusset at the extremity opening to increase the elasticity of the extremity portion near the gusset; and a releasable closure for securing the gusset around the extremity opening to provide a snug thermal seal for the extremity portion.

[0035] Those persons of ordinary skill in the arts would be able to use the teachings in this application to make an easy access and egress surfer's wet suit of the present invention to fit different users, such as men, women, and children.

[0036] Further uses of the benefits of the instant teachings will become known to those skilled in the art by studying the figures in combination with the claims which are appended hereto.

[0037] While this invention has been described with respect to various specific examples and embodiments, it is to be understood that the invention is not limited thereto and that it can be variously practiced within the scope of the following claims.